

A revision of the group *Mesopsis* (Orthoptera, Acrididae)

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The genus *Mesopsis* I. Bolívar is usually referred to the subfamily *Catantopinae*, because of the presence of a prosternal tubercle. This, however, is not an absolute character, since the tubercle is absent in some members of *Catantopinae*, and present in some genera of other subfamilies. On the other hand, the specialised elytral venation in the male of *Mesopsis* and the presence of the stridulatory pegs on the inner side of its hind femur are definite characters not of the *Catantopinae*, but of the *Acridinae*. In fact, *Mesopsis* is clearly related to *Brachycrotaphus* Krauss, which has been originally described as a member of *Catantopinae*, but is an unquestionable Acridine. The Acridine affinities of *Mesopsis* have been recently confirmed by Slifer on anatomical grounds (*Journ. Morph.*, vol. 65, 1939, pp. 444, 447).

The group *Mesopses* includes the following six genera: *Brachycrotaphus* Krauss, *Mesopsis* I. Bolívar, *Aswatthamanus* Kirby, *Kirmaniania* Uvarov, *Dhimbama* Henry and *Psectrocnemus* Henry. In the morphological respect, the group represents a specialised offshoot from the group *Ochrilidia*¹, the specialisation consisting mainly in the extreme elongation of the body and in the tendency to develop a highly elaborate stridulatory mechanism. The elongation of the body is in agreement with the habitat of these insects which all live among tall savanna grasses. The distribution of the known genera corresponds to that of the Old World savannas. Two genera (*Brachycrotaphus* and *Mesopsis*) occur in the savannas of Africa, and the isolated relict occurrences of *Brachycrotaphus tryxalicera* in Spain and Sicily merely suggest a former northward extension of the Afri-

¹ This group has been known as *Platypternae*, but the generic name *Platypterna* Fieber 1853 is preoccupied by *Platypterna* Hitchcock 1848 (Reptilia) and has been replaced by the synonymous *Ochrilidia* Stål 1873 (see Uvarov, 1940, *Ann. & Mag. Nat. Hist.*, ser. 11, VI, p. 116).

can savannas, while the presence of a species of *Mesopsis* in southern Arabia supplies evidence of the African affinities of the latter country. In Asia, the genera *Aswatthamanus*, *Dhimbama* and *Psectrocnemus* occur in the grasslands of India, and the Persian *Kirmania* and *Aswatthamanus iranicus*, like *Brachycrotaphus tryxalicera* in Europe, mark the former northern limit of grasslands of the tropical type.

KEY TO THE GENERA

- 1 (8) Mesosternal lobes, even in the male, separated or just touching each other in the middle. Lateral pronotal carinae present, though sometimes weak.
- 2 (7) Head not more than half as long again as pronotum. Lobes of hind knees rounded.
- 3 (6) Elytra apically rounded, not reaching beyond the middle of the extended hind tibia.
- 4 (5) Prosternum gibbose but not tuberculate. ♂ : inner spines of hind tibia normal; cercus simple; subgenital plate about four times the length of the cercus, laterally compressed, pointed..... *Dhimbama*.
- 5 (4) Prosternum with a low tubercle. ♂ : inner spines of hind tibia ridged; cercus recurved; subgenital plate, normal, short..... *Brachycrotaphus*.
- 6 (3) Elytra apically acute, reaching the apex of extended hind tibia. ♂ : inner spines of hind tibia normal; cercus simple; subgenital plate narrowly conical..... *Kirmania*.
- 7 (2) Head twice as long as pronotum. Lobes of hind knees pointed. Elytra strongly pointed, reaching beyond the apex of the extended hind tarsus. ♂ : inner spines of hind tibia normal; cercus simple; subgenital plate long, narrowly conical..... *Aswatthamanus*.
- 8 (1) Mesosternal lobes in both sexes contiguous for most of their length. Lateral pronotal carinae absent. Head twice as long as pronotum.
- 9 (10) Prosternum with a blunt tubercle. ♂ : inner spines of hind tibia ridged; cercus recurved; subgenital plate short, with truncate apex. ♀ : cercus normal..... *Psectrocnemus*.
- 10 (9) Prosternal tubercle high, laterally compressed, bent backwards. ♂ : inner spines of hind tibia normal; cercus simple, straight; subgenital plate extremely long, laminate. ♀ : cercus extremely long, laminate..... *Mesopsis*.

I. Genus **Dhimbama** Henry 1940.

1940. *Dhimbama* Henry, Trans. Ent. Soc. London, 90, p. 505.

1. **Dhimbama dawsoni** Henry 1940.

1940. *Dhimbama dawsoni* Henry, l. c., p. 507, fig. 4.
India: Coimbatore and Madura districts.

2. **Dhimbama** (?) **indica** Uvarov 1932.

1932. *Brachycrotaphus indicus* Uvarov, Soc. Ent. Fr., Livre du Centen.,
p. 299, fig. 8.
S. India.

The species is known only from a female, and its generic assignment may have to be revised when the male is discovered.

II. Genus **Brachycrotaphus** Krauss 1877.

1877. *Brachycrotaphus* Krauss, Sitzber. Akad. Wiss. Wien, I Abt., LXXVI,
p. 47.
1896. *Brachycrotaphus* Karsch, Stett. Ent. Zeit., 57, p. 264.
1910. *Ochridia* Kirby (*nec* Stål), Syn. Cat. Orth., III, p. 149.
1932. *Brachycrotaphus* Uvarov, Soc. Ent. Fr., Livre du Centen., p. 285.

The synonymy of this genus, its characters, distribution etc., have been discussed by me (l. c., 1932) in a revision where ten species have been listed and re-described. Two of these, *B. longiceps* I. Bol. and *B. indicus* are now removed to other genera, and an additional species, *B. brevis* Uvarov has been recently described. Thus, the genus now includes the following nine species:

1. *B. tryxalicerus* (Fischer 1853).
2. *B. kraussi* Uvarov 1932.
3. *B. steindachneri* Krauss 1877.
4. *B. sjostedti* Uvarov 1932.
5. *B. lloydi* Uvarov 1932.
6. *B. buettneri* Karsch 1896.
7. *B. karschi* Uvarov 1932.
8. *B. rammei* Uvarov 1932.
9. *B. brevis* Uvarov 1938 (Mission Scient. de l'Omo, IV, p. 154, fig. 2).
N. E. Uganda.

Redescriptions, figures, distribution, and full references to the first eight species will be found in my revision.

III. Genus **Kirmania** Uvarov 1933.

1933. *Kirmania* Uvarov, Trav. Inst. Zool. Acad. Sci. URSS, I, p. 190.

1. **Kirmania exilis** Uvarov 1933.

1933. *Kirmania exilis* Uvarov, l. c., p. 190.
S. E. Persia: Kirman province.

IV. Genus **Aswatthamanus** Kirby 1914.

1914. *Aswatthamanus* Kirby, Fauna Brit. India, Acrid., pp. 96, 101.

1914. *Lefroyia* Kirby, l. c., p. 192.

1914. *Lefroya* Kirby, l. c., p. 219.

1. **Aswatthamanus cylindricus** Kirby 1914.

1914. *Aswatthamanus cylindricus* Kirby, l. c., p. 101, figs. 82, 83.

1914. *Lefroya acutipennis* Kirby, l. c., p. 219.

1921. *Aswatthamanus cylindricus* Uvarov, Ann. & Mag. Nat. Hist., ser. 9, VII, p. 482.

The above synonymy, established by me in 1921, can be definitely confirmed, as I have now before me a pair of types of *Lefroya acutipennis* Kirby (the male labelled Pusa, Bihar, 4.IX.06 is here selected as the single type) which do not differ in any way from the types of *Aswatthamanus cylindricus*.

2. **Aswatthamanus iranicus** Uvarov 1933.

1933. *Aswatthamanus iranicus* Uvarov, Trav. Inst. Zool. Acad. Sci. URSS, I, p. 187.

S. E. Persia: Kirman and Bampur provinces.

V. Genus **Psectrocnemus** Henry 1940.

1940. *Psectrocnemus* Henry, Trans. Ent. Soc. London, 90, p. 511.

1. **Psectrocnemus longiceps** (I. Bolívar 1902).

1902. *Ochrilidia longiceps* I. Bolívar, Ann. Soc. Ent. Fr., 70, p. 595.

1932. *Brachycrotaphus longiceps* Uvarov, Soc. Ent. Fr., Livre du Centen., p. 299.
 1940. *Psectrocnemus longiceps* Henry, l. c., p. 513, figs. 7, 8.
 S. India.

VI. Genus **Mesopsis** I. Bolívar 1906.

1831. *Mesops* Serville, Ann. Sci. Nat., xxii, p. 267 (preoccupied name !).
 1906. *Mesopsis* I. Bolívar, Bol. Soc. Esp. Hist. Nat., vi, p. 392.

This is the most highly specialised member of the group as regards the general body shape and the structure of sternum connected with it. Further specialisation consists in the structure of the male subgenital plate, but this is already somewhat elongated and laterally compressed in *Aswatthamanus* and *Dhimbama*. The prosternal tubercle of *Mesopsis* is certainly much more developed than in any other genus of the group, but it is present in all of them. It is of interest to record that, on the other hand, *Mesopsis* is much less specialised as regards the venation of male elytron than *Brachycrotaphus*, which has also a highly peculiar type of stridulatory adaptation of posterior tibiae. In fact, the venation in *Mesopsis* is of the same general type as in the group *Ochrilidia*.

Specific classification in the genus *Mesopsis* is very confused, and my intention of its critical revision had to be abandoned since I was unable to re-examine the types of the majority of known species. I will, therefore, restrict myself to an annotated list of species.

1. **Mesopsis abbreviatus** (Palisot de Beauvois 1805).

1805. *Truxalis abbreviatus* Palisot de Beauvois, Ins. Afr. Amer., p. 18, Orth. pl. 2, fig. 4.
 1831. *Mesops abbreviatus* Serville, Ann. Sci. Nat., xxii, p. 267.
 1839. *Mesops abbreviatus* Serville, Ins. Orth., p. 586.

This is the type of the genus, but unfortunately, it is also the least known species. Original description is very short and indefinite and the figure is very doubtfully exact. Making allowances for its being inexact, one might consider *abbreviatus* conspecific with *gracilicornis* Kr. (see below), with which it agrees in the vertex being distinctly tectiform and narrowed forward. Against this suggestion, is, however, the considerable width and the shortness of the antennae

in the figure; further, Serville's redescription (1839) based on the actual type, mentions transverse black fasciation on the inside of hind femur, such as is characteristic for *laticornis* Kr. but is definitely absent in *gracilicornis*. Since the type has been lost, there is no other course open but to hope that further collecting in West Africa will bring a species sufficiently similar to the original description, and to Serville's re-description, which will make it possible to revise the problem. It is unfortunate that even the type locality remains uncertain, since Palisot de Beauvois described it as from «*mêmes lieux que les précédentes*». This refers to three other species of *Truxalis*, the first of which is said to occur «à Chama, à Oware et à Benin». The second of these localities I was unable to trace, while the Benin river in the Gold Coast is well known, and Chama is also on the shores of Gold Coast, just east of Sekondi. In the absence of more definite information, I would suggest that the neighbourhood of the mouth of the Benin river should be considered as the type locality for *M. abbreviatus* (P. B.).

2. ***Mesopsis gracilicornis*** (Krauss 1877).

1877. *Mesops gracilicornis* Krauss, Sitzber. Akad. Wiss. Wien., math.-nat., Kl., LXXVI, p. 51, pl. 2, figs. 14, 14 A.
 1931. *Mesopsis gracilicornis* Sjöstedt, Ark. Zool., 23 A, No. 17, p. 33, pl. 5, figs. 4, 5.

The type of this species also appears to have been lost, since it could not be found amongst the species of *Mesopsis* in the Vienna Museum, all of which were kindly sent to me by Dr. Beier. One of the specimens, it is true, has a label in Krauss' own writing «*Mesops gracilicornis* Krauss, ♂. Type ! Sierra Leone», but this must be due to the transposition of the label, since the specimen bears a further label «Steindachner 1869. Senegal», while the type must be from Sierra Leone. Moreover, the specimen disagrees with the description and figures of *M. gracilicornis* in the structure of the head and antennae as well as in the wholly hyaline hind wings and in the transversely fasciated inside of hind femur; it agrees in all these respects with *M. laticornis* and must be a cotype of that species. Dr. Karny, who has examined this specimen, correctly labelled it as *M. laticornis*.

Although the type of *M. gracilicornis* remains unknown, I believe I am correct in applying this name to the same species as has been done by Sjöstedt (*l. c.*). I have before me a long series of specimens

from the following countries: Gold Coast (Sarkwalla, Yapi); Cameroons (Abon M'Bang district); Nigeria (Shuari; Kalkala); Sudan (Mongalla); Uganda (S. Karamoja; Moroto; Butiaba; Tororo-Mbale road); Tanganyika Territory (Old Shinyanga; Tinde). There is a considerable variation in the size of the specimens, but this does not seem to have any geographical significance, since the Old Shinyanga series includes some very small and very large specimens, e. g. the total length in males varying from 40 to 60 mm. (including the subgenital plate).

This species is characterised by its narrow and very long antennae reaching well beyond the base of hind femora; the vertex narrowed forward and strongly tectiform above, without the reflexed margins; elytra not or scarcely reaching hind knees; male subgenital plate unicarinate; female supraanal plate not attenuate and not covering the ovipositor; wings with a large dark basal spot, seldom reduced in females; hind femur without a trace of transverse fasciation and without any red colour.

3. *Mesopsis tricastatus* sp. n.

Closely allied to *M. gracilicornis*, but distinct from it in smaller size, shorter and broader antennae, and particularly by the tricarinate male subgenital plate.

♂. Antennae moderately long, reaching just beyond the base of hind femora; joints 3-8 expanded, the following ones distinctly compressed.

Head twice the length of pronotum; frons and fastigium of vertex as in *M. gracilicornis*. Fastigial foveolae well delimited, reaching the base of antennae, distinctly sinuate.

Pronotum weakly sellate; lateral lobes with the front lower angle rounded-lobate, lower margin distinctly concave, lower hind angle obtusely rounded.

Elytra extending a little beyond the hind knees; venation as in *M. gracilicornis*.

Subgenital plate equal in length to head and half of pronotum, slightly decurved, with the lateral carinae well developed and reaching the apex.

General colouration pale greenish-brown, with antennae, head and abdomen above reddish-brown; elytra hyaline, greenish; wings with blackish base; hind femur without dark pattern on the inside; subgenital plate reddish brown.

♀. Ovipositor valves not covered by the supraanal plate and the lateral plates.

Length of body ♂ 47 (including subgenital plate), ♀ 50; head ♂ 8, ♀ 11; pronotum ♂ 4, ♀ 5; elytra ♂ 19.5, ♀ 22; hind femur ♂ 13, ♀ 15; subgenital plate ♂ 9.5 mm.

ANGOLA. *Moxico district*: river Langiliko, 23.VI.1927, 2 ♂♂, 1 ♀; upper Mu-Simoi river, 27.IX.1927, 1 ♂; valley to r. Mu-Simoi, 25.X.1927, 1 ♀ larva.—*Bihé district*: Cohemba, 14-15.IX.1917, 1 ♂. *Luchase district*: river Quangu, 16.X.1927, 1 ♂ (*type*).

The type is actually the longer of the males before me, others being clearly smaller than the smallest *M. gracilicornis*.

4. **Mesopsis hessei** Uvarov 1929.

1929. *Mesopsis hessei* Uvarov, Ann. S. Afr. Mus., xxix, p. 68, fig. 11.

In the original description, I have compared this species with *M. abbreviatus*, but under that name I meant *M. gracilicornis* as I interpret it now. Since the type has been accidentally destroyed and the paratypes are not accessible to me, I am unable to add more to the diagnosis of the species, but the differences from *M. gracilicornis*, as indicated in the description, are certainly of specific value. The species is known only from S. W. Africa.

5. **Mesopsis alienus** Uvarov 1936.

1936. *Mesopsis alienus* Uvarov, Linn. Soc. Journ., Zool., xxxix, p. 541.

This is the only species of the genus known to occur outside Africa, although it is found in a part of Arabia with strong biogeographical affinities with Africa.

When describing *M. alienus*, I compared it with *M. gracilicornis* (incorrectly called by me then *M. abbreviatus*). Actually, however, it is most closely allied to *M. hessei* and to *M. sudanicus* described below, where some comparative notes will be given.

6. **Mesopsis sudanicus** sp. n.

Very similar to *M. alienus* Uv., particularly in the structure of head, but clearly distinct from it by transversely fasciated inner side of hind femur, which is relatively longer, and by fully tricarinate male subgenital plate.

♂. Antennae, if bent backwards, reaching only just beyond the base of hind femur, expanded up to the 10th joint, then rather suddenly narrowed.

Head less than half as long again as pronotum. Vertex less than twice the length of an eye, weakly narrowed to the apex; upper surface convex, but with shallow lateral furrows; foveolae of vertex flat, long, very obtusely carinated above.

Pronotum rugulose above; its anterior and posterior margins equally convex.

Elytra as in *M. alienus*.

Hind femur three times the length of pronotum.

Subgenital plate stout, distinctly tricarinate, equal in length to the head.

Colour uniformly pale stramineous; inner face of hind femur reddish, with black transverse fasciae. Wings hyaline.

♀. Ovipositor valves, covered by the elongated supraanal plate and the lateral plates.

Length of body ♂ (with the subgenital plate) 54, ♀ 62; antennae ♂ 18, ♀ 21; head ♂ 8, ♀ 11; pronotum ♂ 6, ♀ 8; elytra ♂ 24, ♀ 31; hind femur ♂ 15, ♀ 20.5; subgenital plate ♂ 9 mm.

ANGLO-EGYPTIAN SUDAN. Um-Darag, Kordofan province, IV-VII. 1933, 12 ♂♂ (including the type), 8 ♀♀ (*R. C. Maxwell-Darling*); Abu-Tawaqia, 28.I.1933, 1 ♀ (*R. C. Maxwell-Darling*); Atbara, 1 ♀ (*G. Bray*); Wad Medani district, VI.1925, 1 ♂, 1 ♀ (*H. B. Johnston*); no exact locality, 2 ♀♀ (*R. M. Hawker*).

While very close to the Arabian *M. alienus* in the short conical head, this species can scarcely be regarded as its subspecies, since both are known to me in series and their differences are constant.

There may be some suspicion whether this is not *M. abbreviatus* P.-B., which it resembles in the general appearance, as far as can be judged from the poor figure of the original author. However, it is best to consider them distinct until topotypes of *M. abbreviatus* can be studied.

7. *Mesopsis laticornis* (Krauss 1877).

1877. *Mesops laticornis* Krauss, Sitzber. Akad. Wiss. Wien, math.-nat., Kl., LXXVI, p. 49, pl. II, figs. 13, 13 A-H.

1925. *Mesopsis brevicauda* Miller, *Ann. & Mag. Nat. Hist.*, ser 9, vol. xv, p. 626, fig. 4 (*syn. nov.*).

This species has been adequately described by Krauss and by Miller and is easily distinguished from others by the reflexed margins of the fastigium of vertex which is broad. A study of long series of specimens from a wide range of localities suggests that the characters used by Miller in separating his species are of doubtful value, the differences being within the range of individual variation. There is a bare possibility that the more northern form (*laticornis*) might be distinguished from the more southern (*brevicauda*) mainly by its somewhat more narrow fastigium with less reflexed margins, but the two are at the most only subspecifically distinct. As regards the apparently striking difference in the structure of the female supraanal plate which, according to Miller, is in *M. brevicuda* deprived of the long apical appendage as known in *M. laticornis*, this character is not areal one. The fact is that the apical extension of the plate (the egg guide) is less sclerotised than the rest of it and can be folded along the median line and then tucked away between the ovipositor valves; the female paratype of *M. brevicuda* is in this condition, while the various stages of folding of the appendage can be seen in other specimens before me. It should be added that the appendage is folded and tucked away when the ovipositor valves are open, and extend over them when they are closed.

The var. *infusca* described by Krauss represents only a stage in the colour development of an individual. A series of specimens collected by Mr. E. Burtt in the Taganyika Territory shows clearly that the dark pigment of hind wings develops gradually, probably in connection with sexual maturation.

M. laticornis is known from a wide range of localities in tropical Africa.

8. **Mesopsis carinulatus** I. Bolívar 1908.

1908. *Mesopsis carinulatus* I. Bolívar, Mem. Soc. Ent. Belg., xvi, p. 107.

The status of this species is very doubtful, and it is probably only a synonym of *M. laticornis*, since the differences indicated in the original description appear of no specific value. Unfortunately, I was unable to study the unique type and the problem has to remain open.